west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3007B
Plant ID No.:	103-00049
Applicant:	Eureka Hunter Pipeline, LLC
Facility Name:	Carbide Site
Location:	Wetzel County
NAICS Code:	211111
Application Type:	Modification
Received Date:	March 7, 2014
Engineer Assigned:	David Keatley
Fee Amount:	$1,000
Date Fee Received:	March 11, 2014 ($300) and March 25, 2014 ($700)
Complete Date:	April 30, 2014
Due Date:	July 29, 2014
Applicant Ad Date:	April 16, 2014
Newspaper:	*Wetzel Chronicle*
UTM's:	Easting: 528.737 km Northing: 4,376.709 km Zone: 17
Description:	Truck loading will be controlled with a 2.4 MMBTU/hr vapor combustor rather than the current vapor return. All other equipment is existing.

DESCRIPTION OF PROCESS

This facility compresses/dehydrates natural gas. Raw gas and produced liquids will be received from local production wells via three pipelines entering the station. Lower pressure wet inlet gas will be passed through an inlet separator, compressed, dehydrated, and sent to an exiting pipeline. The inlet separator creates a velocity drop in which liquids fall out of the natural gas stream. These liquids flow from the bottom of the inlet separator to a three-way separator. From the three-way separator water is sent to a brine water tank (T05), condensate is sent to ten (10) condensate tanks (T12 - T22), and the vapors from the three-way separator are compressed and sent to the inlet side of the compressor engines. The engine that provides power for the compressor associated with the three-way separator is S5A which is a Caterpillar 3406 NA (DOM September 22, 2005) four-stroke

rich-burn 215 bhp natural gas fired compressor engine equipped with a Miratech Catalyst. The catalyst for associated with engine S5A will have the following reductions in emissions: NO_x, 94%; CO, 94%; VOC, 50%; and formaldehyde, 50%. The liquids from the condensate tanks will be trucked off site and the liquids from the brine tank will be used for the development of other wells. During truck loading a 2.4 MMBTU/hr vapor combustor will be used to control emissions. Truck loading will be limited to 4,380 hours per year. The flash vapors from the condensate tanks are compressed and sent to the inlet side of the compressor engines. To help ensure complete combustion auxiliary fuel will be included for combustion S15-A. S6A is a Caterpillar 3306 NA (DOM September 28, 1993) four-stroke rich-burn 215 bhp natural gas fired compressor engine which provides power for the compressor which compresses the flash emissions from the condensate tanks and is equipped with a Miratech Catalyst. The catalyst associated with engine S6A will have the following reductions in emissions: NO_x, 94%; CO, 94%; VOC, 50%; and formaldehyde, 50%.

The gas streams that come from the inlet separator, compressed condensate flash vapors, and compressed three-way separator vapors are combined and compressed. S1 - S4 and S8 - S13 are Caterpillar 3516B four-stroke lean-burn 1,380 bhp natural gas fired compressor engines which power the associated compressors to compress the combined natural gas stream. The compressor engines are equipped with an EMIT oxidation catalyst which reduces emission of: carbon monoxide, VOCs, and formaldehyde. After compression the natural gas stream is sent to a Valerus dehydration unit. In the contactor the natural gas stream will flow countercurrent to circulating lean TEG. The rich TEG from the contactor will be sent to the regenerator where TEG is heated by a 1.5 MMBTU/hr reboiler (S7) to remove the moisture. The maximum dry natural gas flow rate is 80 MMCF/day. The vapors from the regenerator are sent to a condenser. The liquids from the condenser are sent to the condensate tanks. The vapors from the condenser are sent to the reboiler S7 to achieve a 95% combustion efficiency.

SITE INSPECTION

Doug Hammell from the DAQ's Compliance and Enforcement Section performed a site visit of this facility on October 15, 2013 and the facility was deemed in compliance. Nothing within sight of the facility, however Google Earth (September 5, 2013 image) shows a house approximately 500 feet away.

Directions: From the intersection of SR 2 and SR7. Take SR7 east until you reach SR 20. Take SR 20 east until approximately two miles past Hastings. Turn right onto Union Carbide Road (gravel). Travel on Union Carbide Road for approximately 1 mile and the facility is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions for truck loading will be estimated using AP-42 with an overall efficiency of 97.7% for the vapor combustor. AP-42 emission factors will be used to estimate emissions from the vapor combustors pilot. Emissions for emission point E16 will include captured and uncaptured from the vapor combustor, and emission from the vapor combustors pilot.

Table 1: Estimated Modified Maximum Controlled Air Emissions

Emission Point	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
E16	Vapor Combustor	Nitrogen Oxides	0.18	0.32
		Carbon Monoxide	0.42	0.57
		Volatile Organic Compounds	0.88	0.96
		Carbon Dioxide Equivalents	315.58	628.40

Table 2: Current, Proposed, and Increase in Estimated Controlled Total Facility Wide Emissions

Pollutant	Current Maximum Facility Wide Air Emissions (tons/year)	Proposed Maximum Facility Wide Air Emissions (tons/year)	Increase
Nitrogen Oxides	71.66	71.98	0.32
Carbon Monoxide	31.42	32.09	0.57
Volatile Organic Compounds	50.47	50.61	0.14
Total Particulate Matter	4.87	4.89	0.02
PM_{10}	4.87	4.89	0.02
Sulfur Dioxide	0.28	0.28	0
Formaldehyde	8.58	8.58	0
Benzene	0.07	0.07	0
n-Hexane	0.05	0.05	0
Toluene	0.03	0.03	0
Xylenes	0.02	0.02	0
Total HAPs	16.49	16.49	0
Carbon Dioxide Equivalent	70,208	70,660	451.61

REGULATORY APPLICABILITY

The following rules were reviewed for this modification.

45CSR4 - *To Prevent an Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to the Objectionable Odor or Odors*

This facility shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public. 45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable.

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

The purpose of this rule is to prevent and control air pollution from combustion of refuse.

This facility has one (1) 2.4 MMBTU/hr vapor combustor at this facility. The vapor combustor is subject to section 4, emission standards for incinerators. The vapor combustor has an allowable emission rate of 1.98 pounds per hour of particulate matter. The vapor combustor has an emission limit of 0.09 pounds per hour of particulate matter. Therefore, the facility's vapor combustor should demonstrate compliance with the allowable emission rate. The opacity limit for emission point E16 is 20%.

45CSR13 - *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation*

This facility is subject to 40CSR6 and therefore will require a modification permit.

45CSR22 - *Air Quality Management Fee Program*

This facility is subject to 45CSR22. This facility is a minor source for all regulated air pollutants as seen from the proposed facility wide air emissions column in Table 2. This facility is also not subject to 45CSR30 because the NSPS are Title V exempt. Since this facility has a total reciprocating engine capacity of greater than 1,000 hp (14,230 hp) this facility is a 8D source with an annual fee of $500. The permittee will be required to keep their Certificate to Operate current.

AIR QUALITY IMPACT ANALYSIS

Based on the annual emission rates this facility will not be a major source as defined by 45CSR14 which can be seen in Table 2, so air quality modeling was not performed.

CHANGES TO PERMIT R13-3007A

Permit R13-3007B will supersede and replace R13-3007A. Truck loading will be controlled with a 2.4 MMBTU/hr vapor combustor rather than the current vapor return. Sections 8 and 9 were added to the permit and typographical errors were corrected.

RECOMMENDATION TO DIRECTOR

The information provided in this facility's permit application indicates that compliance with all state and federal air quality requirements will be achieved . It is recommended that Eureka Hunter should be granted a 45CSR13 Modification permit for their Carbide Site facility.

David Keatley
Permit Writer - NSR Permitting

May 27, 2014
Date